BULK MILK HAULERS TRAINING MANUAL

ACCEPTED PROCEDURES FOR COLLECTING MILK FROM FARM BULK TANKS

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FORWARD

A farm bulk milk hauler is a person who, at any time; grades, samples, and measures the milk in a farm bulk milk tank; withdraws milk from bulk tanks; or delivers milk to a dairy plant.

The hauler is more than just a truck driver. The hauler must:

- Grade the milk to verify acceptability and must reject all milk of unsatisfactory quality.
- Determine the amount of milk by using proper measuring techniques.
- Be the official collector of samples that are to be used to determine payment and quality of milk.
- Advise the producer about the quality of the milk.
- Have a keen sense of smell to recognize off-odors.
- Have good eyesight.
- Understand and follow proper methods of sample collecting.
- Be able to interpret results of official samples.
- Know the fundamentals of proper cleaning and sanitizing of milk contact surfaces.
- Have a good working knowledge of quality milk production.
- Be honest to both the producer and the plant.

The success of a bulk milk operation will depend upon the willingness of the hauler to accept responsibilities and perform the latest accepted procedures in collecting milk from farm bulk tanks. If the hauler does not follow accepted procedures, the hauler may be in violation of state laws and regulations.

It is strongly recommended that the prospective hauler train with a licensed hauler for a minimum of two weeks before taking the test, observing the legal practices of sampling and weighing milk by the licensed hauler, including stick reading.

LAWS AND REGULATIONS THAT APPLY TO ALL BULK MILK WEIGHERS AND SAMPLERS

Statute 98.146 Licensing Milk Weighers and Samplers

All persons taking weights and samples of milk in bulk tanks or measuring milk in bulk tanks to determine weight, on the farm premises where such milk is produced, shall be licensed by the Department under this section, and no person who is not so licensed shall engage in such activities.

Each application for a license under this section or renewal thereof shall be made on forms provided by the Department and shall be accompanied by a fee of $60 [and is subject to change]. **No cash accepted**, fee to be paid by personal check, postal money order, or bank draft. Such license shall expire on September 30 biennially. The applicant shall give proof of the ability to engage in such weighing and sampling to the satisfaction of the Department by passing a written examination pertaining to such activities. A passing score must be obtained before the bulk milk weigher and sampler

license can be issued. Any person holding a valid cheesemaker or buttermaker license under statute 97.17 is authorized to perform the duty of weighing and sampling milk without being required to have a separate weigher and sampler license. However, the cheese or buttermaker must pass the Bulk Milk Weigher & Sampler examination.

No dairy plant shall receive any milk prior to the weighing and sampling by a licensee under this section unless it has been so weighed and sampled.

LAWS THAT PERTAIN TO BULK MILK HAULERS

Statute 97.21

No person may operate a bulk milk tanker in this state without a valid license issued by the department for that bulk milk tanker. This does not apply to a person who operates a bulk milk tanker solely as an employee of a person who holds a license. Each application for a license under this section shall be made on forms provided by the department and shall be accompanied by the required fee. The license expires annually on April 30 and is not transferable between persons or bulk milk tankers.

No person may operate a bulk milk tanker to transport bulk grade A milk for sale or distribution without a valid grade A milk permit issued annually by the Department for that bulk milk tanker. A grade A bulk milk tanker permit is not transferable between persons or bulk milk tankers. The department may not charge a fee for a grade A bulk milk tanker permit.

Statute 97.24(3) Rules

"The Department, in consultation with the Department of Health and Social Services, shall issue rules governing the production, transportation, processing, pasteurization, handling, identity, sampling, examination, labeling and sale of milk and fluid milk products; the inspection of dairy herds, dairy farms and dairy plants; the issuing and revocation of permits to milk producers and milk haulers, and of licenses to dairy plants and milk distributors."

Under Statute 97.24(3), the Department has issued Wisconsin Administrative Codes ATCP 60 (Dairy Farms), ATCP 80 (Dairy Plants) and ATCP 82 (Milk Haulers) which are based on the Pasteurized Milk Ordinance (PMO) of FDA/PHS.

The Pasteurized Milk Ordinance (PMO) is a guideline which most states have adopted as their regulation for the production of Grade A milk and milk products.

CHECKLIST PRIOR TO STARTING ON THE ROUTE

The hauler must have certain supplies and equipment in order to satisfactorily perform the requirements of measuring, sampling, pumping and transporting the milk. A milk hauler shall wear clean, light colored clothes and an effective hair restraint when measuring, sampling or collecting milk at a dairy farm. A milk hauler shall maintain a high degree of personal cleanliness, and shall observe good hygienic practices during all working periods. No milk hauler who has a discharging or infected wound, sore or lesion

on his or her hands or exposed arms may measure, sample or collect milk at a dairy farm. Before starting out, check for the following supplies and equipment:

1. The truck tank and transfer equipment have been properly sanitized. The responsibility to clean and sanitize the tank and/or pump of the farm bulk truck may lie with a plant employee. However, it is the bulk hauler's responsibility to check the tank and the pump to insure it is in sanitary condition.

2. The most recent wash tag must be attached. This wash tag should contain the following information:
   - The location where the tank was cleaned and sanitized.
   - The date of washing and sanitizing.
   - The signature or initials of the employee who washed and sanitized the tank.

3. The following sampling equipment must be present on the truck:
   - An adequate supply of sample containers.
   - Sample dipper.
   - The sanitizing solution of 100 ppm chlorine or its equivalent in a covered dipper container. The milk hauler shall carry a sanitizing solution test kit to test the strength of the sanitizing solution.
   - Insulated sample carrying case with a rack to hold sample containers.
   - Adequate ice or other refrigerant to maintain sample temperature of 32-40°F (0 - 4.4°C).

4. A dial thermometer which is accurate to ± 2° F.

5. A waterproof, indelible marker to identify samples when needed.

6. A watch or other timing device.

7. An adequate supply of milk weight tickets, and pen or pencil to record the required information.

8. Single-service paper towels.

ACCEPTED PROCEDURES FOR PICKING UP BULK MILK AT THE FARM

Step 1 Grading Milk Quality – Odor and Appearance

Odor:

Milk must be graded by appearance and smell before it is accepted. The bulk hauler has to decide whether the milk has a good odor. If any off-odor is detected, the milk must be rejected. Off-odor milk from one farm bulk tank might spoil a full tank truck of milk. Any off-odors are likely to be carried over into the finished product. If there is any doubt in the hauler's mind about the acceptability of a tank of milk, a representative of the receiving plant should be contacted before the milk is pumped into the bulk truck tank.

When grading for odor, the hauler should make this check through the port opening, or by raising the hatch, just long enough to detect possible off-odor.

It is important that the hauler not taste milk for flavor because of bacterial significance of raw milk. Nevertheless, the hauler should realize that if off-odors are found, off-flavors are also present.

Flavor is the most important factor in consumer acceptance of dairy products. Milk flavor control must begin on the farm. The odors or flavors most often found in milk at the farm are: feed, weedy rancid, barny and unclean, bacterial, salty, and foreign. The hauler must be able to recognize these odors and flavors and know the causes and prevention.

Feed Flavors

Most green feeds and silage will give the milk a feed flavor if not handled or fed properly. Feed flavors enter the milk through the digestive system, respiratory system, and by direct absorption. Feeding cows silage during or just before milking causes an objectionable feed flavor in the milk.

Research indicates that most feed flavors are detectable in the milk and are usually most pronounced at the end of two hours.

Feed flavors that enter the milk through the respiratory system can usually be detected much sooner than those entering through the digestive system. If a cow breathes air with silage and barny odors, these flavors can be detected in the milk almost immediately. The flavors directly absorbed are less common but appear if the milk is left exposed for a long period of time.

Recommended Controls:

- Put cows on pasture as early in the morning as possible.
- Feed silage after milking, never before or during milking.
- Keep mangers clean so that the barn will not smell strongly of silage. This can be done by feeding no larger quantity of silage than the cows will readily eat.
- Ventilate the milking barn properly.

Weedy Flavors

Weeds, such as bitterweed, carrot weed, ragweed, wild onion, and many others, can give an off-flavor to milk.

Recommended Controls:

- Follow good pasture management and control undesirable weeds.

Rancid Flavors

This flavor is sometimes described as bitter, soapy, or cowy. Much research has been done on the rancidity in milk, but there are still many unanswered questions. However, development of rancid flavor can usually be prevented.

Rancid flavor is caused by normal enzymes (lipase) in milk which alters the milkfat structure, releasing free fatty acids. There are two types of rancidity in milk. They are spontaneous rancidity and induced rancidity.

Spontaneous rancidity will develop with no apparent activation treatment. It is associated with late lactation, disease (mastitis), feed, and individual cows. These factors appear to make milk more susceptible to the development of rancidity.

Induced rancidity requires that the milk undergo certain activation treatments for rancidity to develop.

Factors that contribute to induced rancidity are:

- Agitation with an incorporation of air or foaming of warm raw milk (caused by air leaks).
- Temperature or thermal activation--rewarming of previously cooled raw milk to 50° F (10°C) or above, and cooling to 40° F (4.4°C).
- Freezing.
- Excessive growth of psychrotrophs (bacteria which grow at low temperatures).

Recommended Controls:

- Prevent unnecessary agitation and pumping of milk.
- When installing a pipeline milker, make sure there are no risers present and no air leaks.
- Make sure that the bulk tank has enough cooling capacity to prevent the blend temperature from exceeding 50° F (10°C). (Blend temperature is the temperature of the combination of warm milk added to the previously cooled milk).
- Withhold milk from cows in late lactation.
- Do not hold raw milk for prolonged periods. Milk pickup should not be at a longer period than every other day.

Barny and Unclean Flavors

These flavors are caused by unclean milking procedures, unclean milk equipment, and poor ventilation.

Recommended Controls:

- Keep milk equipment clean.
- Follow good milking procedures.
- Ventilate the milking barn properly.

Bacterial Flavors

Many off-flavors in milk, such as bitter, malty, medicinal, and sour, can be attributed to excessive bacterial growth. Poor sanitary practices encourage a buildup of certain types of organisms which can grow at lower temperatures and cause off-flavors. Good sanitary practices are essential even with the best cooling methods.

Recommended Controls:

- Keep milking equipment clean and sanitize just prior to use.
- Follow good milking procedures.
- Cool the milk to 45° F (7.2°C) or lower immediately after milking.

Salty Flavors

This off-flavor is usually attributed to milk from mastitic cows and cows late in lactation.

Recommended Controls:

- Withhold milk from cows showing early signs of abnormal milk and from cows in very late lactation.

Foreign Flavors

These off-flavors can come from many sources such as chemical sanitizers, ointments used for treating udders, paint, fly spray, medicine, etc.

Recommended Controls:

- The control of such off-flavors is a matter of careful handling of the above-mentioned materials so that the flavor or odor from them will not find its way into the milk.
- Use chemical sanitizers only in the concentrations indicated by the directions.

Appearance:

The hauler must observe the surface of the milk in the bulk tank by lifting the entire lid of the bulk tank.

Milk which contains visible foreign matter, such as dust, insects, blood, chemicals, and any other abnormal material, is unfit for human consumption and must be rejected. Foreign matter in milk indicates poor milking practices, abnormal appearance shows milk from diseased cows.

The hauler should also observe any signs of churning, freezing and foaming of the milk. This must be reported to the farmer and receiving plant field representative.

Step 2 Reading and recording temperature

The hauler must read and record the temperature of the milk at each farm. Milk in excess of 45° F (7.2°C) shall be rejected unless milk is collected within 2 hours after milking, then the blend temperature may not exceed 50° F (10°C). Some markets and plants require a temperature of 40° F (4.4°C) or less. Temperatures above 50° F (10°C) in the tank can be a warning that the bulk tank is not cooling properly and that the milk may have an off-flavor or high bacteria count.

Each hauler must have an accurate thermometer (certified accurate every six months) so that he can periodically check the accuracy of the bulk tank thermometer. The hauler shall check the bulk tank thermometer at least once each month against his pocket thermometer and maintain a record in the milkhouse. Be sure to sanitize the pocket thermometer stem in 100 ppm chlorine or its equivalent each time before checking the temperature of the milk. Report immediately to the plant and farmer if the bulk tank is not cooling properly.

- The temperature check, with the pocket thermometer, should be done after the bulk hauler's hands are washed and dried.
- Record the actual temperature of the milk found in the farm bulk tank
- Reject all milk over 45° F (7.2°C), unless milk is collected within 2 hours after milking, then blend temperature may not exceed 50° F (10°C). Document on weight ticket if collected within 2 hours of milking and temperature is between 46°F (7.7°C) and 50°F (10°C)

Step 3 Washing hands

Once the necessary examinations of the milk have been made, the cap should be removed from the bulk tank. Examine outlet valve for milk deposits and foreign material, rinse and clean if necessary. Sanitize the outlet valve. The milk hose must be brought through the port opening, not through the milkhouse door. The hauler must attach the hose in a manner so as not to contaminate the milk hose and the hose cap. The bulk hauler's hands shall be washed and dried immediately after attaching the hose and before measuring the milk.

The bulk hauler's hands shall always be clean while handling the milk or milk contact surfaces. Every milkhouse is required to have facilities for washing and drying hands.

The bulk hauler also should wear clean, white or light-colored clothes and head covering. Dressed in this manner, the bulk hauler will be more careful while conducting pickup procedures, and a good example will be set for all dairy farmers on the route.

Step 4 Measuring the milk

Milk weights are based on a measurement taken by the bulk milk hauler. This is accomplished through the use of a graduated measuring rod. Each graduation is

equivalent to a determined number of pounds of milk posted on a conversion chart calibrated for this specific tank.

Accurate measurement can only be obtained when the surface of the milk in the bulk tank is motionless. If the agitator is running when the hauler arrives, it must be turned off and the surface of the milk allowed to become motionless before an accurate reading can be taken. A wait of 10 minutes may be necessary after the agitator is turned off before the milk can be measured accurately.

The sampler shall obtain an accurate reading of the bulk measuring stick by using a dry, clean stick at approximately room temperature (65-70°F, 18.3 - 21.1°C). The stick shall be rinsed with warm, potable water and shall be wiped with a clean, disposable towel and then inserted into the bulk tank for reading.

Should there be any foam floating on the surface, gently move the foam away from the measuring area with the end of the measuring rod, before inserting rod. Remove the rod and read to the nearest graduation mark. Should the reading appear to be exactly midway between two graduations, the reading should be recorded as that of the even number (National Institute of Standards and Technology).

After reading the stick, the hauler converts the reading to pounds of milk by using the chart provided by the bulk tank manufacturer.

Occasionally, changes will take place in or around the bulk tank which will affect the accuracy of a measuring rod. The hauler should be aware of these possible changes and when one or more of these are noted, the hauler must notify the farmer and the receiving plant.

Factors Causing Weight Losses in Farm Bulk Tanks

Farm bulk tank not giving accurate readings.

- Incorrect calibration.
- Not level.
- Heaving, cracking or settling of milkhouse floor causing shifting of bulk tank.
- Distortion of a measuring rod bracket or seat.

Excessive milk weight losses may be caused by:

- Overreading or underreading.
- Poor measuring techniques.

Recording Information for Milk Quality and Value

Acceptance of milk takes place when the hauler withdraws the milk from the farm bulk tank. At this time, the farmer is entitled to information used to determine the quality and value of his milk.

The following information shall be recorded on the weight collection record: (A duplicate copy shall be made with one copy left at the farm and the other taken to the plant receiving the milk).

- Date.
- Time.
- Producer identification number.
- Temperature.
- Quantity of milk collected.
    - Measuring rod reading.
    - Conversion to weight.
- Sampler's signature or initials and sampler's license numbers and expiration date.

Sampling of the Milk

The proper analysis of a sample of milk, whether it be for bacteria, fat or any other test, is dependent upon the reliability of the sampling procedure. To obtain a satisfactory sample, the sample must be representative. The procedure used in sampling must be done in a manner to prevent any type of contamination of a sample. The equipment used in sampling must be clean and dry and the samples should be stored in a manner to prevent any change prior to testing. Adequate agitation, suitable equipment, proper sampling procedures and refrigeration of the samples are necessary to provide a sample that is representative.

The bulk hauler shall take a representative fresh milk sample large enough to permit retesting by the dairy plant, from each bulk tank prior to collection and delivery of a patron's milk.

Step 5 Agitating the milk.

The sampler shall agitate the tank to get a proper sample for fat and bacteriological determination. Milk shall be agitated for at least 5 minutes or more before taking a sample from a bulk tank less than 1500 gallons, 10 minutes for tanks 1500 gallons and over.

Since some tanks require longer agitation times before a representative sample can be obtained, butterfat tests that are abnormally high might be an indication that the tank is not being agitated long enough to obtain an accurate sample. The sampler should check their watch when turning on the agitator or, if the agitator is running when the sampler arrives, timing starts at that point.

Step 6 Taking a sample

A sampling dipper must be used to aseptically transfer a sample of milk from the bulk tank to the sample container used to carry the sample to the official laboratory. This sample transfer instrument can be a straight seamless metal tube; long handled metal dippers of not less than 10 ml. capacity; single service paper sampling tubes; or other means of taking samples aseptically. The dipper must be stored in a clean sanitizing solution of suitable strength.

Sample containers must be properly protected from contamination. All sampling containers shall be transparent. The container shall be clean, commercially sterile and dry. Single-service transparent containers may be used for taking samples of fresh milk. Sample containers shall bear legible letters or numbers identifying each patron sampled, and date sampled. Fresh milk sample containers shall have a capacity of sufficient size to permit thorough mixing and hold a quantity large enough to permit two tests.

The sample case for shipping and/or transporting the samples should be a rigid metal or plastic case with insulation. It must have ample space for cracked ice or other refrigerants to cool the samples and keep them at 32-40° F until delivery at the laboratory. The sampling case should be supplied with proper racks to hold the samples in an upright position.

Sampling Procedures at the dairy farm:

- Be sure your hands are clean and dry.
- Identify each sample container with the patron number and date.
- Make sure milk in tank is properly agitated.
- Do not sample frozen, partially frozen, lumpy, curdled or churned milk.
- Remove sampling dipper from its container in the milkhouse. If a dipper is used for sampling milk, it must be cleaned and sanitized before use. The dipper shall be stored in a clean chlorine solution (100 ppm) or other suitable sanitizing solution of equivalent strength between stops. The sanitizer test kit shall be used to determine if the solution is at the proper strength.
- Open sample container, being careful not to contaminate the container and/or the cap.
- Rinse dipper twice in the milk before taking the sample.
- When pouring the sample into its container, the milk hauler shall take care not to contaminate the sample or spill milk back into the open bulk tank.
- Do not overfill the sample container. (Fill to approximately 2/3 full). Excess milk in dipper shall be properly disposed.
- Always take a second sample of milk at the first stop of each load as a temperature control sample. Identify this sample as "temperature control" and show patron number, date, time, temperature of the milk in the farm bulk tank and hauler identification.

The sample dipper must be rinsed in clean tap water and stored in a sanitizing solution after each use.

Step 7 Refrigerating the sample.

Promptly place the sample in the refrigerated sample case and keep it at 32-40°F (0 - 4.4°C) until delivered to the dairy plant. Provide a rack to keep the samples upright and to prevent them from being contaminated. Make sure the ice water is slightly above the milk level in the sample container.

Step 8 **Pumping milk from bulk tanks**.

If the agitator has been running during the pumping, it should be stopped when the level of the milk in the tank gets below the top of the agitator. This will prevent the possibility of product loss.

Never leave a farm bulk tank partially full.

Milk may not be collected from any other container at the farm, except a farm milk bulk tank.

Step 9 **Disconnecting hose**.

The hauler must make sure the tanker hose is disconnected before the tank is rinsed to prevent adulteration of the milk with water.

Step 10 **Rinsing bulk tank.**

Rinse bulk tank with cold or lukewarm water. This makes it easier for the farmer to wash the tank.

Before rinsing the foam from the bulk tank, the bottom of the tank must be checked for sediment, churned fat, and coagulated or precipitated milk solids. Any abnormalities found should be reported to the milk producer and to the field staff of the receiving plant. The complete inside of the farm bulk milk tank, including the covers and bridge, must be rinsed with cold or lukewarm water.

Any evidence that the tank was not properly washed after the last collection should be brought to the attention of the farmer and the receiving plant.

The outside of the tank and the milkhouse floor should be rinsed; the rinse hose put back on its rack; all lights should be turned off; and the milkhouse door closed before the hauler leaves the farm.

UNLOADING THE TANKER

The unloading of the tanker must be done in a manner so as to prevent contamination of the product and to prevent the truck tank from collapsing.

Before milk can be pumped from the farm pickup milk tank at the dairy plant, it is sometimes necessary to disconnect the hoses and pump. Proper care must be taken by the hauler at this time to avoid contamination of any milk contact surfaces. Transferring milk from one tanker to another may be done only at a licensed dairy plant.

While the milk in the tanker is being pumped out, the space occupied by the milk in the truck tank is being replaced by air from outside the tanker to prevent the truck tank from collapsing. In some cases, this outside air contains contaminants such as gas fumes, carbon, and dust which could get into the milk in the tanker.

To avoid this contamination, the air entering the tanker must be filtered. Many satisfactory methods of filtering this air are available and must be used.

WASHING THE TANKER

The hauler must make sure the tanker is clean after each day's use and sanitized before reuse. ATCP 82.08 requires that facilities are made available to clean and sanitize tankers. To assure that this is being done, a tag bearing the name or initials of the person responsible for cleaning and sanitizing, the date and the name and location of the dairy plant shall be attached in the sampling compartment until the truck is washed after the following day's use, at which time it is replaced with a new tag. All tags or records are to be retained for a period of 15 days.

Certain parts of all tankers must be dismantled for proper cleaning. These are the milk pump and its parts; the tanker hose and its connections; the manhole cover and its parts; and the stainless steel inlet to the tank compartment and its gaskets.

It is best to sanitize the tanker just before use to prevent any corrosion of stainless steel. However, in many cases, tankers are kept at locations remote from sanitizing facilities. In this case, noncorrosive type sanitizers can be used. The tanker and its parts are sanitized immediately after washing, then the tanker and its parts are assembled with all inlets and outlets protected to prevent any contamination. If commingled or grade B milk is picked up before picking up a load of grade A milk, the bulk milk tanker must be washed and sanitized.

The tanker is now ready for another day's operation.

It is the purpose of this guideline to thoroughly acquaint the bulk milk hauler with proper methods of loading, measuring, sampling and unloading bulk milk.

It is hoped that this guideline will better prepare the hauler to do a more proficient job and by doing this, help all phases of the dairy industry. Also, if the hauler does not follow these procedures, the hauler will be in violation of Wisconsin laws and regulations and subject to revocation of his Wisconsin bulk weigher and samplers license.

REVOCATION OF LICENSE

This license may be revoked or penalties may result when the operator violates Wisconsin's milk hauling and sampling regulation, ATCP 82 (Milk Haulers), if:

- The hauler fails to grade milk in a farm bulk tank as to its odor and appearance and fails to reject all milk which is abnormal in odor or flavor or that contains visible garget and extraneous matter.
- The hauler does not accurately take and record the temperature of milk or if the hauler fails to reject milk in excess of 45° F (7.2°C) unless milk is collected within two hours after milking. The blend temperature may not exceed 50° F (10°C).
- The hauler fails to wash their hands after checking the temperature and before proceeding to measure milk.

- The hauler fails to follow accepted procedures in measuring the amount of milk in the bulk tank, or if immediately after taking the reading, convert the reading to pounds or gallons using the chart of the tank manufacturer and record it on duplicate forms, with one copy to be posted in the milkhouse and one transmitted to the dairy plant.
- The hauler fails to agitate the milk for at least 5 minutes in bulk tanks less than 1,500 gallons and 10 minutes in tanks over 1,500 gallons before taking a sample or if he withdraws any part of the milk from the tank before the sample is taken.
- The hauler does not take a sample for milkfat testing and/or bacteria analyses in an approved manner, of a sufficient size, in an approved container, properly labeled, and refrigerate the sample to maintain its temperature at 32-40° F (0 - 4.4°C).
- The hauler rinses the bulk tank before disconnecting the hose.

LABORATORY TESTS RUN ON MILK

Some of the more important tests run on milk are as follows:

Samples for payment. Results of component tests are used in determining the price paid for the milk sold.

Bacteria count. A monthly standard plate count is run on each farmer's milk to determine bacterial numbers. The number of bacteria found in a sample is usually an indication of the sanitary condition under which milk is produced and handled on the farm. Bacteria are tiny one-cell organisms so small they cannot be seen with the naked eye. They are colorless, of various shapes, and are found everywhere.

Because of the presence of bacteria on everything and everybody, contamination of equipment which comes in contact with milk must be avoided. This could happen when taking the measurement, collecting a sample, and/or transferring the milk from the tank to the tanker.

Bacteria multiply by dividing and this process is dependent on three conditions: there must be food available, there must be moisture present, and there must be a favorable temperature.

All milk contains some bacteria. Food and moisture is present in milk, thus any bacteria in milk will multiply rapidly at a warm temperature but will not multiply as fast in cold temperatures.

The bulk hauler must not, through carelessness, add any additional bacteria to the milk supply. The hauler must also prevent reproduction of an original amount of bacteria by maintaining the temperature of the milk samples between 32° F and 40° F.

Antibiotic or inhibitory test. Milk containing antibiotics and other drugs is considered to be adulterated. Inhibitory tests are run monthly to determine the presence of these materials in milk.

These materials could be residues of medicines used to treat the milking animals, such an antibiotic and other drugs. They could also be residues of misused sanitizers.

These residues cannot be removed by processing procedures. Thus, their presence sometimes causes violent allergic reactions to some people and can also inhibit starter cultures used in the manufacture of dairy products. Farmers must withhold all milk from cows that have been treated with antibiotics for a period of at least 72 hours after the last treatment or longer if listed on medicinal label.

Sediment test. This test consists of filtering milk through a disc and checking the amount of residue present. It is a rapid method to determine whether some careless practices exist on the farm.

Pesticide residue test. The use of improper insect killing materials on or near milk cows or the misuse of an approved insecticide in the milk production and handling area can result in residues of this material showing up in the milk.

Only approved materials should be used and then used according to instructions on the container label. Lists of approved pesticide materials are available from the inspectors, fieldmen, and extension agents.

Abnormal milk test. Samples are collected monthly which are examined for the presence of milk from mastitic cows. Milk from cows with mastitis is considered abnormal milk and must be withheld from the market.

To determine if the milk is abnormal, a cell count is made on the milk. If the count is above 750,000 per ml, it is considered to be abnormal.

Udder irritation and mastitis can be caused by poor milking practices, improper cattle housing, improperly operating milking machines, or physical injury to the udder.

If the test results indicate the presence of abnormal milk, the producer should obtain professional help from his veterinarian. In all positive cases, a follow-up examination should be made by a qualified person to determine the cause and prescribe the method of treatment and/or correction.

Test for added water. The cryoscope, an accurate analytical test, is used to determine the presence of water. The cryoscope determines the freezing point of the milk. A high freezing point indicates the presence of added water. These tests are so accurate that they are accepted as evidence in court.

MILK QUALITY STANDARDS

There are legal composition and quality standards for all milk. Standards include minimum butterfat and solids-not-fat content, maximum bacteria counts, and provisions prohibiting any level of inhibitory substances (antibiotics, sulfa drugs, sanitizers, etc.).

TEST	GRADE A	GRADE B
Bacteria Count	100,000 max	300,000 max
Somatic Cell Count	750,000 max	750,000 max
Antibiotics	Zero Tolerance	Zero Tolerance
Inhibitory Substance	Zero Tolerance	Zero Tolerance
Pesticides	Zero Tolerance	Zero Tolerance
Added Water	Zero Tolerance	Zero Tolerance
Fat	Not less than 3%	Not less than 3%
Solids-Not-Fat	Not less than 8.25%	Not less than 8.25%

Goat and Sheep milk may have different legal composition and quality standards which are not identified for purposes of the hauler exam.

This training manual is designed to provide information to bulk milk haulers on accepted practices and procedures for collecting milk from bulk tanks. Requirements of state laws and administrative rules are found in the following statutes and regulations:

1. Section 98.146, Wis. Statutes
2. Section 97.21, Wis. Statutes
3. Chapter ATCP 82 - (Milk Haulers)
4. Chapter ATCP 80 - (Dairy Plants)
5. Chapter ATCP 60 - (Dairy Farms)

Copies of the laws and regulations can be viewed, downloaded and printed from the internet

www.datcp.state.wi.us
Quick Links: click on
ATCP Rules:
Scroll to find the appropriate ATCP rule

Copies of the laws and regulations may be obtained by writing to:

Wisconsin Department of Agriculture,
Trade & Consumer Protection
Division of Food Safety
2811 Agriculture Drive
PO Box 8911
Madison WI 53708-8911
Phone: 608/224-4700

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